

**WHAT IS CLAIMED:**

1. A method of nucleic acid molecule delivery into a fertilized egg comprising:
  - 5 providing a fertilized egg prior to its formation of a protective layer;
  - providing a nucleic acid molecule; and
  - combining the nucleic acid molecule and the fertilized egg under conditions effective to allow the nucleic acid molecule to be delivered into the egg.
- 10 2. The method according to claim 1, wherein the nucleic acid molecule is heterologous to the egg.
- 15 3. The method according to claim 1, wherein the nucleic acid molecule is homologous to the egg.
4. The method according to claim 1, wherein the nucleic acid molecule is in an expression vector.
- 20 5. The method according to claim 4, wherein the expression vector is a linear vector.
6. The method according to claim 4, wherein the expression vector is a circular vector.
- 25 7. The method according to claim 4, wherein the expression vector comprises a label.
8. The method according to claim 7, wherein the label is selected from the group consisting of a radio-active label, a fluorescent label, a chemiluminescent label, and a biotinylated label.

9. The method according to claim 1, wherein the nucleic acid molecule comprises a label.

10. The method according to claim 9, wherein the label is selected  
5 from the group consisting of a radio-active label, a fluorescent label, a chemiluminescent label, and a biotinylated label.

11. The method according to claim 1, wherein the egg is from a species selected from the group consisting of marine fish, freshwater fish, and crustaceans.

10 12. The method according to claim 11, wherein the egg is from a crustacean species.

15 13. The method according to claim 12, wherein the egg is a shrimp egg.

14. The method according to claim 1, wherein said combining comprises:  
combining a transfection reagent with the nucleic acid molecule and the  
20 fertilized egg.

15. The method according to claim 14, wherein the transfection reagent is selected from the group consisting of a cationic lipid reagent, a liposomal cationic lipid reagent, a cationic non-liposomal lipid reagent, an activated dendrimer reagent, and a  
25 cationic polyethyleneimine reagent.

16. The method according to claim 15, wherein the transfection reagent is a cationic polyethyleneimine.

30 17. The method according to claim 15, wherein the transfection reagent is a linear cationic polyethyleneimine reagent.